ENVIRONMENTAL DATA SERVICES

STATEMENT OF QUALIFICATIONS

INTRODUCTION

ENVIRONMENTAL DATA SERVICES, LTD.

Data Validation •Technical Writing • Consulting •Data Interpretation

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Analytical Data Consulting

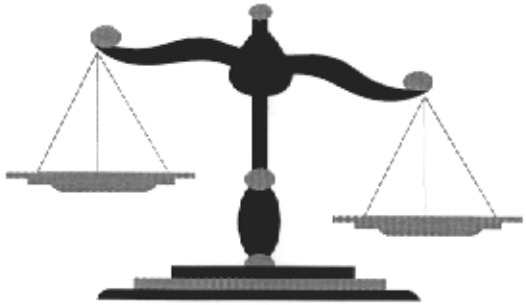
Environmental Data Services, Ltd. will provide expert analytical data consulting services in support of your environmental projects.

Our clients realize the benefits of having a resident analytical data expert on staff without adding to the groups overhead costs because our services are contracted on a project by project basis.

Since analytical costs are typically 25% of the overall project expense, making Environmental Data Services part of your project team will enable you to maximize the effective use of those significant analytical dollars.

Putting together a technically stronger team that is at the same time cost effective will put you ahead of your competition.

The following text outlines some of the specialized services Environmental Data Services, Ltd. has to offer.



Assessment of Project Criteria and Guidelines

The primary objective of any data validation project we undertake is to provide assurance that the environmental data generated in support of your project are acceptable for their intended use. We accomplish this task by systematically reviewing the analytical data provided and comparing it with criteria established in the USEPA Functional Guidelines for Evaluating Inorganic/Organic Analyses, as well as placing specific emphasis on project defined data quality objectives.

Highlights of the EDS validation process:

- Document control system used to log and store laboratory data
- Data completeness is evaluated
- Necessary data supplements or corrections are acquired
- Appropriate criteria and guidelines are applied to data
- Overall data assessment is summarized

The detail and relative complexity of our data validation reports are defined based on your project needs. Validation deliverable options include data in electronic data base formats.

When a critical set of data requires evaluation it is imperative that the data is interpreted and that usability is determined by a highly qualified individual who is free of bias.

EDS is a completely independent organization, thereby eliminating the potential for conflicting interests. The Director and Senior Environmental Scientist for EDS, Ms. Diane Waldschmidt, is a professional with over twelve years experience in the environmental laboratory and consulting industries. Her analytical experience and project management skills are applied to each project insuring successful completion on time, under budget, and to your complete satisfaction.

Laboratory Auditing

Laboratory Performance Monitoring

Laboratory Auditing

Environmental Data Services, Ltd. will perform comprehensive laboratory audits. Audits can be used to pre-qualify contract laboratories or to evaluate capabilities of existing contractors.

An experienced laboratory professional will perform the on-site evaluations. The following list outlines just some of the criteria evaluated:

- Laboratory facilities and equipment
- Systems and procedures of operation
- Qualifications and experience of laboratory personnel
- Laboratory capacity
- Types of analyses performed
- Relative cost of services

Laboratory audits are customized to focus on your specific project needs. A detailed report outlining facility capabilities as well as the auditors observations will be furnished defining each category including topics of special interest.

By utilizing EDS experts to pre-screen laboratory contractors you can become an educated consumer of laboratory services. Thereby, increasing the effectiveness of each analytical dollar spent.

Laboratory Performance Monitoring

Some clients have a need to evaluate laboratory performance on an ongoing basis. Environmental Data Services, Ltd. staff will submit performance evaluation samples to contract laboratories and request specific analyses and reporting to be provided. These samples will be of known value only to EDS. Once the results are received from the laboratory EDS will provide a thorough report detailing the findings of the study. Careful evaluation of the laboratories success in determining both qualitative and quantitative analyte concentrations will be discussed.

Knowing the accuracy with which your samples are defined on an ongoing basis can help you feel confident when relying on data points generated to make crucial decisions or prove regulatory compliance.

Technical Proposals

Quality Assurance Project Plans

Analytical Data Interpretation

Environmental data services is prepared to provide expert oversight of your analytical data collection process from project conception and design, through final data interpretation and usability assessment.

Technical Proposals

Technical proposals written by an experienced environmental laboratory professional will not only relieve your hectic schedule, but will access the most cost effective, technologically advanced, quality analytical product currently available. You specify project quality and data usability goals, and we will provide a technical proposal outlining the best way to achieve those goals. Best of all, because we are an independent organization you can be certain that proposals are designed with your needs as our only objective.

Quality Assurance Project Plans

Quality Assurance Project Plans are extremely important. The QAPP documents in detail how a project will be carried out and how the resulting analytical data will be judged. Often this document is reviewed by one or more regulating agencies prior to final approval. This all important process is extremely time consuming. Why not let an experienced individual with a proven track record in this area design, write and amend as appropriate all or portions of your QAPP's. Time is money and EDS can save you both. A well-written QAPP that is constructed with your project needs in mind can make a significant difference in how regulators view your management of the project, how smoothly project directives are carried out, and in many cases to what extent those extremely expensive analytical data points may be used.

Analytical Data Interpretation

Once the investment is made and the analytical data is in, the question remains is the data useable for the purpose originally intended? Environmental data services will perform a thorough data review and provide a comprehensive assessment of data completeness, usability and quality. This service provides expert interpretation of the environmental data received. The same data you rely on to make crucial decisions concerning if, where, and how your firm will spend additional dollars due to potential environmental liabilities. Why not have an experienced analytical chemist on your team?

EXPERIENCE

PROJECT SUMMARIES

Environmental Data Services was formed in 1994 to serve industrial, engineering and government enterprises in the capacity of expert environmental analytical chemist consultants.

EDS performs strictly as an independent third party. Some of the services EDS have provided are data validation, laboratory qualification, development of project quality assurance plans, on-site laboratory inspection, organizational training (data validation and data review).

Table 1 summarizes some of the larger data validation projects successfully completed by EDS over the past several years.

Texarkana Site - EDS has successfully completed data validation of 450 soil and 50 water samples obtained under consent decree at the Texarkana Site in USEPA Region VI. Data validation was carried out based on Data Quality Assurance Plan as well as the USEPA's Functional Guidelines for the Evaluation of Organic and Inorganic Analyses.

Sellersville Landfill - EDS staff have completed the validation of well over one hundred samples of various matrices (soil, water and TCLP extracts) in support of the remedial investigation performed at the Sellersville Landfill. Region III modifications to the USEPA Functional Guideline for Evaluation of Inorganic/Organic Analyses were applied to a full range of analytical data generated via both USEPA CLP protocols and non CLP protocols.

Moorestown, Pulverizing Site - EDS staff have worked as part of the site investigation project team since 1984, serving in a quality assurance oversight capacity. Data validation of well over 75 soils and 25 water samples obtained under a USEPA Region II consent decree at the superfund site have been validated by EDS staff members. Analyses evaluated consisted of complete TCL organics, TAL inorganics, herbicides and PCDD/PCDF's. Data validation was carried out based on the project specific Quality Assurance Plan as well as USEPA Region II data validation SOP's.

Passaic River Study Area - EDS has provided data validation, data base management and technical consulting services as part of the RI/FS project team since 1995. Data validation has been completed on over 700 river sediment borings. The extensive analytical testing program consists of the following:

- TCL organics (plus individual PCB congeners), TAL inorganics (plus titanium), herbicides, PCDD/PCDF's, coplanar PCB's, radionuclides, TEPH and TOC.

- The validation procedures in use include a compliance review with the project QAP and stipulated analytical procedures, as well as a data usability assessment following USEPA Region II validation SOP's.

Aberdeen Proving Ground - Data validation services were provided by EDS as a sub to a prime contractor. Validation of analytical results was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses. Analyses for approximately 100 samples (water and soil) were validated by EDS. Both TCL organic and TAL inorganic results were examined.

Bolling Air Force Base - EDS staff completed the validation of approximately 25 samples collected as part of the Navy Clean (NEESA) program at Bolling Air Force Base. Analyses examined included TCL volatiles, BTEX (8021), gasoline range organics, and diesel range organics. Validation protocols were used based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses.

Diamond Alkali Superfund Site - EDS provided data validation services over a one-year period of remedial construction activities. During this time span, over 150 samples were validated by EDS staff. USEPA Region II validation SOP's, as well as project specific validation procedures were used to assess the quality and usability of analytical data generated in support of the project. The following types of analytical data were evaluated (when requested) in as little as 24 hours:

> Dioxin, TCL organics, herbicides, TAL inorganics, TSS, TDS, Alkalinity, Sulfate, TOC, Nitrate, Chloride, oil and grease, TEPH, and ammonia.

Westinghouse, Bloomington Ind. - EDS staff has validated approximately 100 samples analyzed for PCB's via method 8080. USEPA Region V validation modifications were utilized during the process of data evaluation. The data completeness, accuracy and usability were assessed.

Leighton Industries - EDS staff completed the validation of over one hundred samples in support of a site investigation at Leighton Industries property. Validation was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses. Analytical data for water and soil were examined. Concentrations of TCL organics and TAL inorganic analytes were determined via USEPA SW-846 methodologies. Data usability was assessed as well as method and contract compliance.

General Rivet - Over 150 samples collected at the General Rivet Property during a site investigation were validated by EDS staff. The samples collected were analyzed via SW-846 methodologies to determine the concentrations of TCL VOA, TCL BNA and TAL inorganics. Validation was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses.

Little Rio Grande Creek - EDS staff completed the validation of approximately 50 samples in support of a field investigation at the Little Rio Grande Creek site. Analytical data for soil, water and TCLP leachates were examined. The samples collected were analyzed via SW-846 methodologies to determine the concentrations of TCL organics, TAL inorganics, toxicity characteristics and classical chemistry parameters. Validation was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses as well as EDS validation SOP's.

Chas Farm - Approximately 60 samples analyzed for TAL inorganics and classical chemistry parameters were validated by EDS staff in support of the remedial field investigation. Sample results were determined based on the USEPA CLP inorganic SOW ILM03. Validation was performed in accordance with the USEPA's National Functional Guidelines for the Evaluation of Inorganic Analyses.

Projects	No of Samples	USEPA Region	TCL VOA	TCL BNA	TCL Pesticide/ PCB	Herbicides	TAL Inorganic	Classical Chemistry	Radio-nuclides	PCDDs/ PCDFs	Toxicity Charact -eristics	Congener PCBs	PAHs
Passaic River Study Area	700	II	X	X	X	X	X	X	X	X		X	X
Diamond Alkali Superfund Site	150	II	X	X	X	X	X	X		X			
Moorestown Pulverizing Site	100	II	X	X	X	X	X			X			
Aberdeen Proving Ground	100	III	X	X	X		X						
Bolling Air Force Base	25	III	X										
Texarkana	500	VI	X	X			X	X			X		
Westinghouse, Bloomington, IN	100	V			X								
Sellersville Landfill	100	III	X	X	X		X	X			X		
Little Rio Grande Creek	100	III	X	X	X		X	X			X		
General Rivet Site	100	III	X	X			X						
Chas Farm Site	60	V					X	X					
FCX Statesville	200	IV	X	X	X		X	X					
Idaho National Laboratory	1000	DOE	X	X	X	X	X	X	X	X	X	X	X

EDS PERSONNEL

Diane Waldschmidt

Director/Senior Environmental Scientist
B.S. Chemistry

Diane has over fourteen years experience in the environmental laboratory services industry and eight years of validation experience beginning in 1983. She has directed overall laboratory operations including responsibilities for quality control and the technical direction of laboratory testing. The following is a partial list of relevant experience:

Areas of laboratory expertise are: Volatile and semivolatile organic compounds by gas chromatography (GC) and gas chromatography mass spectrometry (GCMS), pesticides and PCB's, trace metals, classical wet chemistry parameters and CLP inorganic and organic data package review and assembly.

Areas of validation expertise are: Validation of volatile and semivolatile organic compounds by gas chromatography (GC) and gas chromatography mass spectrometry (GCMS), pesticides and PCB's, dibenzo-p-dioxins and dibenzofurans, herbicides, coplanar PCB's, radiological analyses, trace metals, and classical wet chemistry parameters.

Diane has provided services conforming to USEPA Contract Laboratory Program, USEPA Special Analytical Services, PADER NYSDEC, ACOE, AFCEE and NEESA requirements to name a few. Further she has participated in many CERCLA and RCRA projects in coordination with EPA regional staff.

1994 - Present Director, Environmental Data Services, Ltd.

The position currently held by Diane is that of director at EDS. Diane is responsible for complete day-to-day operations of the group. Some areas of responsibility include the following:

Data review and validation
Development of quality assurance project plans
Direction and supervision of data validation activities
Direction and supervision of administrative activities
Project management of all contracted tasks
Technical Training of internal staff as well as EDS clients as requested
Development of policies and procedures both technical and administrative

1992 - 1994 Laboratory Director, Pace Inc.

Diane directed overall laboratory operations including responsibilities for quality control and the technical direction of laboratory testing. The following is a partial list of her responsibilities:

Day to day laboratory operations (Organic, Inorganic & Administrative)
Director of QC chemists and laboratory QA program
Direction and supervision of project management staff
Direction and supervision of marketing staff

1990 - 1992 Laboratory Operations Manager, International Technology Inc.

Diane was responsible for overall laboratory operations including all laboratory-testing areas (inorganic and organic)

Day to day laboratory operations (Organic and Inorganic)
Laboratory certifications including PE samples and on-site audits
Methods development and verification
Technical training and certification of analysts
Scheduling to meet sample throughput requirements
Direction of the CLP data processing/and review groups
Performance of both inorganic and organic CLP contracts

1987 - 1990 Inorganic Laboratory Manager/Project Manager, International Technology

Diane was responsible for overall inorganic laboratory operations including classical chemistry, sample preparation, TCLP, EP toxicity, ICP, CVAA, Flame AA, GFAA laboratory testing areas.

Day to day inorganic laboratory operations
Laboratory certifications including PE samples and on site audits
Methods development and verification
Technical training and certification of analysts
Scheduling to meet sample throughput requirements
Direction of the CLP data processing/and review group
Performance under an inorganic CLP contract

1983 - 1987 Environmental Chemist, NUS Corporation

Diane was responsible for the analysis of environmental samples using USEPA methodologies. Metals determinations were performed primarily based on USEPA CLP protocols. Analyses performed by Diane include, but are not limited to the following:

Alkalinity/Acidity, Hardness, Phenolics, Ammonia, TKN, Cyanide, Fluoride, Chloride, Sulfate, TEPH, Oil and Grease, Hexavalent Chromium, TDS, TSS, TOC, TOX

Acid digestion of samples prior to trace metals determinations, Flame AA operation, GFAA operation, ICP operation

EXAMPLE OF REPORTS/TABLES

DATA ASSESSMENT NARRATIVE FOR VOLATILES

SITE: ACME

LABORATORY: ABC Labs

SAMPLE DELIVERY GROUP: 9610173

This sample delivery group consists of the following soil and water samples:

Field Identification	Laboratory Identification	Field Identification	Laboratory Identification
F-4 Unfiltered	9610173-01	FB-1	9610173-11
D-20 Unfiltered	9610173-04	F-8	9610173-12
D-9	9610173-05	F-10	9610173-13
W-5	9610173-06	F-9 Unfiltered	9610173-15
F-1 Unfiltered	9610173-07	D-21	9610173-16
D-8	9610173-09	D-1	9610173-17
F-6	9610173-10	F-3	9610173-18
Trip Blank	9610173-21	S-1	9610173-19

Samples described above were analyzed via USEPA CLP 3/90 Protocol to determine the concentrations of VOA compounds in soil and water.

Project specific QA objectives as well as the USEPA Region III Modifications to the National Functional Guidelines for Organics Data Review 6/92, and the current Functional Guidelines for the Evaluation of Organic Analyses have been considered during validation of this data and its usability.

All data are valid and acceptable except those anlaytes, which have been qualified as described in the attached glossary. Any data qualification related to this group of samples is detailed on the attached sheets.

Major Data Quality Issues

None.

Minor Data Quality Issues

Surrogate Recoveries - Several samples had associated surrogate recoveries that fell outside allowable limits. Positive and not detected sample results were qualified as estimated.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable due to significant QC problems, the data is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on any data tables even as a last resort.

Lastly, strict QC serves to increase confidence in data but any value potentially contains error.

_____ Date: _____

Diane Waldschmidt
Environmental Scientist/Director

HOLDING TIME

The amount of an analyte can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded the data may not be valid.

The analyses performed on samples in this sample delivery group were all done within established holding times.

BLANK CONTAMINATION

Quality assurance blanks, method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during preparation or field activity. Method blanks measure lab contamination. Trip blanks measure cross contamination during shipment. Field and rinse blanks measure cross contamination during field operations.

Method Blank/Field Blank Contamination

All method blanks were analyzed at the proper frequency. Upon examination neither method blank contained benzene at or above reportable levels.

A field blank was collected and analyzed in association with the samples in this delivery group. No benzene was found to be present in the field blank at or above reportable levels.

Trip Blank Contamination

A trip blank was provided in association with this sample delivery group. No benzene was found to be present above the reporting limit in the associated trip blank.

MASS SPECTROMETER TUNING

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances.

The tuning standard for volatiles is bromofluorobenzene (BFB).

All tunes associated with this SDG were fully compliant.

CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative results. The initial calibration curve demonstrates that the instrument is capable of giving acceptable performance at the beginning of an analytical sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

Response Factor

The response factor measures the instruments responses to specific chemical compounds. The response factors for the VOA Target Compound List must be greater than or equal to 0.05 in both the initial and continuing calibrations. A value less than 0.05 indicates serious detection and quantitation problems.

RRF values in all initial and continuing calibrations were greater than 0.05.

Percent Relative Standard Deviation (RSD) and Percent Deviation (%D)

Percent RSD is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range. %D compares the response factor of the continuing calibration with the mean response factor of the initial calibration. Therefore %D is a measure of the instruments daily performance.

The following QC criteria has been applied for this project:

% RSD of initial calibration must be <30.0 %

% D for continuing calibrations must be <25.0%

A value outside these limits indicates potential detection and quantitation errors. According to Region III modifications (Sept., 1994) all positive results are flagged as estimated, and non-detects are flagged with "UJ" except in situations where there is a gross difference i.e. 50% or greater and then professional judgment takes precedence.

Initial and continuing calibrations associated with sample results examined here, all exhibited acceptable percent relative standard deviation and percent difference values.

INTERNAL STANDARDS PERFORMANCE

Internal standard performance criteria are meant to ensure that the GC/MS sensitivity and response are stable during every experimental run.

The internal standard area count must not vary by more than a factor of two from the associated continuing calibration standard. The retention time of the internal standard must not vary by more than +/- 30 seconds from the associated continuing calibration standard. If the area count is outside the (- 50% - 100%) range of the associated standard, all positive results for compounds quantitated using that standard are qualified as estimated, and non detects as UJ, but only if area is < 50%.

Internal standard recoveries observed in all samples and method blanks were within acceptable limits. No data qualification was performed based on internal standard recoveries.

SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique.

All samples and method blanks evaluated in this report had observed surrogate recoveries within the established limits with the exception of samples GP-33 (0-2) and GP-36 (2-4) RE. All three surrogate standard recoveries fell outside acceptable limits during the analysis of sample GP-33 (0-2). No bias could be determined and therefore all sample results were qualified as estimated except where previously qualified as unusable.

Samples F-9, F-3 and the trip blank had standard surrogate (1,2-dichloroethane) recoveries above the upper allowable limit. No additional analyses were provided to confirm these observations.

According to the Region III modifications (9/94) all positive sample results were qualified as "J" and non-detects as "UJ" for the samples listed above.

All remaining samples and method blanks evaluated in this report has observed surrogate recoveries within the established limits.

COMPOUND IDENTIFICATION

Volatile

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and ion spectra. For the results to be a positive hit, the sample peak must be within $\pm$ 0.06 RRT units of the standard compound, and have an ion spectra which has a ratio of the primary and secondary ion intensities within 20% of that in the standard compound. No analytes were qualified for compound identification.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The matrix spike and matrix spike duplicate are generated to determine the precision and accuracy of the analytical procedure in a given matrix. This information may be used to qualify data.

Sample D-1 was evaluated as a matrix spike/matrix spike duplicate pair. Precision and accuracy indicators were favorable. No significant matrix interference was apparent.

REPORTING

Upon reviewing the QA results, the Form 1(s) are clearly marked as to which to use.

OTHER QC DATA OUT OF SPECIFICATION

None.

FIELD DUPLICATE

Two field duplicate pairs were submitted for validation.

Analyte	F-9 ug/l	F-9 Duplicate ug/l	%D
benzene	22.4	21.7	3.2

Analyte	F-4 ug/l	F-4 Duplicate ug/l	%D
benzene	ND	ND	NC

SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Data quality issues were related to surrogate standard recovery criteria. All remaining QC criteria appear to be acceptable.

Note: The laboratory documentation indicated that discrepancies between dates sampled listed on the field chain of custody versus dates listed on the actual sample containers were found. The validator used the date collected from the COC to evaluate holding time compliance.